

REMARKS

In response to the Office Action, Paper No./Mail Date 20080218, dated March 5, 2005, Applicants have carefully studied the references cited by the Examiner and the Examiner's comments relative thereto. This Amendment is being filed within two months of the mailing date of the final action by the Examiner. Thus, it is understood that if an advisory action is not received within the three-month shortened statutory period, the shortened statutory period will expire on the date the advisory action is mailed, as indicated by the Examiner. It is understood that the statutory reply will not expire later than six months from the mailing of the final action.

Claims 17 and 22 have been amended.

Claims 1-22 remain in the application.

No new matter has been added.

Reconsideration of the application, as amended, is respectfully requested.

Specification Objection

The Examiner objected to the amendment of page 6, lines 8-17 of the specification under 35 U.S.C. § 132(a) "because it introduces new matter into the disclosure." While the Applicants disagree with the Examiner's objection and in the interest of expedition of the application, the previous amendment to page 6, lines 8-17 is hereby withdrawn, and the new amendment to page 6, lines 8-17 above is submitted.

35 U.S.C. § 112

The Examiner rejected Claim 10 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Claim 10 has been amended to provide proper antecedent basis for each limitation set forth therein and to point out and distinctly claim the subject matter which the Applicants regard as the invention. Accordingly, Claim 10 is now in allowable form, and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph is respectfully requested.

The Examiner rejected Claim 11 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner stated, "the claim does not appear to be described in the specification."

Claim 11 recites:

The method according to claim 10 wherein said radiation spectra transmitted through a respective block of said preform is provided as an input for determining said absorption radiation incident to a next adjacent block.

Paragraph [0026] recites, in part:

The inputted preform geometry is discretized (or digitized) into a plurality of small rectangular blocks having a respective volume (shown in FIG. 4). An amount of energy absorbed into each discretized block is calculated and utilized for a temperature calculation. Also, radiation transmitted through a respective discretized block is used in calculating the energy incident and absorbed in a next adjacent discretized block. The radiation absorbed by each respective discretized block is incident to the direct exposure or viewing angle of each lamp as each respective discretized block travels through the oven (FIG. 5).

Paragraph [0026] recites and discloses all of the limitations of Claim 11. Accordingly, withdrawal of the rejection under 35 U.S.C. § 112, first paragraph is respectfully requested.

35 U.S.C. § 103(a)

The Examiner rejected Claims 1 and 17 as being obvious over Hayden M. Reeve, et al., “Experimental and Numerical Investigation of Polymer Preform Heating”, April 2001, Journal of Materials Processing & Manufacturing Science in view of Travis L. Turner, et al., “Numerical and Experimental Analyses of the Radiant Heat Flux Produced by Quartz Heating Systems”, March 1994, NASA Technical Paper under 35 U.S.C. § 103(a).

The Examiner also rejected Claims 2-7, 12-14, and 18-21 as being obvious over Reeve as modified by Turner and further in view of J.P. McEvoy, et al. “Simulation of the Stretch Blow Molding Process of PET Bottles”, 1998, Advances in Polymer Technology; Claims 15 and 16 as being obvious over Reeve in view of Turner in further view of McEvoy; and Claim 22 as being obvious over Reeve, in view of Turner, in further view of McEvoy.

Applicants respectfully assert that the Examiner has failed to establish a prima facie case of obviousness in regards to independent Claims 1, 15-17, and 22 because one skilled in the art would not be motivated or have any suggestion to combine the references. More importantly, even if the references are combined, the combination of references does not produce each and every limitation of independent Claims 1, 15-17, and 22. Independent Claims 1, 15, and 16 recite a method for virtual prototyping of plastic containers or preforms comprising a step of “providing heating information and calculating temperatures of primary and secondary heating sources...”. Similarly, Independent Claims 17 and 22 recite an apparatus for virtual prototyping of plastic containers including a “means for generating primary and secondary temperature heating sources for providing energy to said preform...”

and “a preform module for: ... (a) solving energy equations based on inputs from... said temperature heating sources...”.

The specification of the application defines the primary and secondary heating sources as “lamp wattage, lamp power settings, overall power, reflection coefficients, initial preform temperature, ceramic coating... .” (see para.[0022]). Further, “the power input to the lamps and their emission spectra is used for calculating the temperature of the lamps. One of the inputs comprises a filament enhancement factor which corrects for any lamp element shielding. Secondary sources of radiation like the temperatures of a backplate and reflectors within the oven are calculated from energy received and appropriate reflection coefficients of the back plates and reflectors, respectively” (see para. [0022]). As discussed in depth below, none of the cited references require a primary heating source and a secondary heating source in the virtual prototyping of a plastic preform or container. As a result, no combination of references can properly serve as a basis for rejection of independent Claims 1, 15-17, and 22, nor any claim dependent therefrom, under 35 U.S.C. 103(a).

Claims 1 and 17 recite a method and apparatus, respectively, for the virtual prototyping of containers and performs. In performance of the virtual prototyping method of Claim 1, and in using the virtual prototyping apparatus of Claim 17, a preform and oven geometry are inputted into a design program along with the heating and temperature information of the primary and secondary heat sources (see Claims 1 and 17). The heating information regarding the primary and secondary sources is provided, and temperatures of the primary and secondary heating sources are then calculated (see Claims 1 and 17). As described above, the application defines the primary and secondary heating sources as “lamp wattage, lamp power settings, overall power, reflection coefficients, initial preform temperature, ceramic coating...” (see para. [0022]). Furthermore, another factor accounted for is the “effect of cooling convective air current on an outer surface of the preform as well as a relatively insulated inner surface of the preform” (see para. [0033]).

Reeve discloses an experimental temperature model of a parison extrusion blow molded into a cylindrical furnace in the manufacture of polymer optical fiber (POF) (see Abstract). Reeve does not disclose, however, a method for virtual prototyping that includes heating information and calculating temperatures of primary and secondary heating sources. In fact, Reeve discloses that the numerical model underpredicted the transient heating at certain locations of the parison (see para. 4, pg. 294). The discrepancies are attributed to “additional heating from insulation and fixtures... which were not modeled”. In other words,

secondary heating sources were not considered in the experiment of Reeve (see para. 4, pg. 294). The Examiner even notes this, stating “Reeve does not specifically teach: calculating temperatures of primary and secondary heating sources”.

The Examiner asserts that Turner cures the defect of Reeve. The Examiner states, “Turner recites at page 3, left-side column, second paragraph, ‘Metallic reflector surfaces are assumed to reflect radiant energy via additive specular and diffuse components’, which would reasonably suggest to the ordinary artisan that secondary heat sources are simulated. And on page 2, last paragraph, Turner recites, ‘the Systems discussed in this study include... a single lamp with a flat reflector, a single lamp with a parabolic reflector...’, which further supports secondary heating sources using reflectors” (emphasis added). The discussion of metallic reflectors recited by Reeve and relied up the Examiner is a portion of a paragraph of Reeve that discusses the “Several phenomena common to thermal radiation transport... neglected... .” The disclosure of the “metallic reflectors” must be taken in the context of the entire paragraph describing the neglected secondary sources, and should not be parsed from the disclosure, taken out of context, and erroneously relied on. The secondary heating sources neglected by Turner also include the gaseous environment surrounding and with the quartz envelope, and higher order effects such as scattering and birefringence, polarization induced by any process associated with the quartz (see top of pg. 3, left column, first full paragraph). The metallic reflector surfaces of Turner are assumed to reflect radiant energy via additive specular and diffuse components, thereby treating the metallic reflectors as primary heating sources. Turner does not disclose providing heating information about and calculation of temperatures of the primary and secondary heating sources. Indeed, the secondary sources of Turner are “neglected” entirely or “assumed” to be something they are not, and information regarding the secondary sources if provided nor are temperatures of the primary and second heating sources calculated, as required by the independent claims of the application. Further proof that Turner does not disclose secondary heating sources is that Turner discloses that “a coarse approximation of the entire system is required in order to assign a radiative power (and temperature)” to the primary heat sources, and that “complicated systems require more refined preliminary simulations in order to converge upon these input parameters” (see page 11, right column, first full paragraph). Turner appears to teach away from providing information about and using the secondary heating sources in making calculations of temperatures. A thorough examination of Turner shows that it is completely devoid of any disclosure regarding simulation of primary and secondary heat sources in the virtual

prototyping of containers or performs.

Furthermore, Reeve discloses an experimental temperature model of a parison extrusion blow molded into a cylindrical furnace in the manufacture of polymer optical fiber (POF) using the SIMPLER finite difference algorithm, while Turner discloses the model of a system includes a quartz lamp or a plurality of quartz lamps using the Monte Carlo method. Turner is devoid of any mention of the SIMPLER method, the modeling of parisons, polymer optical fiber, and the like. Accordingly, one skilled in the art would have no motivation to combine the Reeve and Turner references.

Accordingly, even if the Reeve and Turner references are combined, the combination does not produce every limitation of independent Claims 1 and 17, which recite a “calculating temperatures of primary and secondary heating sources”. As discussed above, Reeve is devoid of any mention of secondary heating sources, while Turner expressly neglects secondary heating sources and provides a “coarse approximation” of the entire system. Therefore, one skilled in the art would have no motivation to combine the Reeve and Turner references, and even if the references were combined, the combination of references fails to teach or suggest each and every limitation of independent Claims 1 and 17. As a result, this combination of references cannot properly serve as a basis for rejection of independent Claims 1 and 17 under 35 U.S.C. § 103(a), and Claims 1 and 17 are allowable.

The Examiner has failed to establish a prima facie case for Claims 2-7, depending from independent Claim 1, and Claims 18-21, depending from independent Claim 17, under 35 U.S.C. § 103(a) as being unpatentably obvious over Reeve in further view of Turner. Because Claims 2-7 and 18-21 contain at least the same limitations as Claims 1 and 17, respectively, as discussed above, Claims 2-7 and 18-21 are also allowable.

The Examiner rejected Claims 8 and 9 as being obvious over Reeve as modified by Turner as applied to Claims 1 and 17, further in view of Robert Siegel and John R. Howell, “Thermal Radiation Heat Transfer”, 2002, Taylor & Francis, pages 35-63, 155-192, 207, 248, 267-286, 295-325, 335-357, 371-406, 419-429 under 35 U.S.C. § 103(a).

Claims 8 and 9 depend, directly or indirectly, from Claim 1. For the reasons stated above, the combination of Reeve and Turner do not disclose each and every limitation of Claims 1, namely, the calculation of temperatures of the primary and secondary heating sources. The Examiner relied on the Siegel reference for an alleged teaching of determining an absorption spectra and the alleged teaching of discretizing the preform into a plurality of blocks of a respective volume, wherein the absorption spectra is determined for each of the

blocks. Accordingly, the Siegel reference does not cure the defects of Reeve and Turner, and the combination of Reeve, Turner, and Siegel and cannot be properly serve as a basis for rejection of Claims 8 and 9 under 35 U.S.C. § 103(a).

The Examiner has failed to establish a prima facie case for independent Claims 15 and 16 under 35 U.S.C. § 103(a) as being unpatentably obvious over Reeve in view of Turner in further view of McEvoy. Claims 15 and 16, like independent Claims 1 and 17, recite calculations of temperatures of primary and secondary heating sources and solving energy equations using the temperatures. Like Reeve and Turner, McEvoy does not teach the calculation of temperatures of primary and secondary heating sources and therefore does not cure the defects of Reeve and Turner. The Examiner relied on the McEvoy reference to cure a defect related to providing a stress/strain behavior of the material of a preform; however, a thorough examination of McEvoy shows that it is completely devoid of any disclosure regarding simulation of primary and secondary heat sources in the virtual prototyping of containers or performs. Therefore as discussed above, there is no motivation to combine the references, and even if the references are combined, the combination does not produce the limitation of performing calculations of temperatures of primary and secondary heating sources in virtual prototyping of containers and performs. As a result, this combination of references cannot properly serve as a basis for rejection of independent Claims 15 and 16 under 35 U.S.C. § 103(a), and Claims 15 and 16 are allowable.

The Examiner has failed to establish a prima facie case for independent Claim 22 under 35 U.S.C. § 103(a) as being unpatentably obvious over Reeve in view of Turner in further view of McEvoy. Claim 22, like independent Claims 1 and 15-17, recites calculations of temperatures of primary and secondary heating sources and solving energy equations using the temperatures. For the reasons discussed above for Claims 15 and 16, one skilled in the art would have no motivation to combine the references, and even if the references were combined, the combination does not produce the limitation of performing calculations of temperatures of primary and secondary heating sources in virtual prototyping of containers and performs. As a result, this combination of references cannot properly serve as a basis for rejection of independent Claim 22 under 35 U.S.C. § 103(a), and Claim 22 is allowable.

For the foregoing reasons, withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

The other references cited by the Examiner, but not applied, have been studied and are not considered to be any more pertinent than the references relied upon by the Examiner.

It is submitted that the claims distinctly define the Applicants' invention and distinguish the same from the prior art. Reconsideration of the application, as amended, is respectfully requested. A formal Notice of Allowance is solicited.

While the Applicants' attorney has made a sincere effort to properly define Applicants' invention and to distinguish the same from the prior art, should the Examiner deem that other language would be more appropriate, it is requested that a telephone interview be had with the Applicants' attorney in a sincere effort to expedite the prosecution of the application.